

IN THE CLAIMS

1. (Currently amended) A cell observation apparatus comprising:

a cell observation chamber comprising therein a pair of wells and a flow path for communication between said wells and being arranged in such a manner that cells in cell suspension stored in one of said wells can react with chemotactic factor containing solution stored in the other of said wells to move from one to the other of said wells through said flow path and a window, in a bottom portion of said cell observation chamber, for observing the movement of cells:

optical observation means for observing said cells moving through said flow path optically from outside said cell observation chamber, said optical observation means comprising a camera, an objective lens arranged vertically upward on a vertical axis, an optical axis extending horizontally between said camera and said vertical axis of said objective lens and a light source illuminating, through said window, ~~said~~ said cells moving through said flow path; ~~and~~

a casing housing ~~said cell observation chamber and said optical observation means~~, said optical observation means being housed in said casing below said cell observation chamber with said objective lens near and below said window; ~~and:~~

an XY stage comprising a first stage mounted within the casing for sliding movement in an X direction and a second stage mounted on the first stage for movement relative to the first stage in a Y direction perpendicular to the X direction, wherein said optical observation means includes an optical system mounted on said second stage and wherein said camera is slidably mounted on said second stage for sliding horizontal movement relative to said second stage.

2. (Currently amended) The cell observation apparatus according to claim 1, wherein;

~~said optical observation means comprises an optical system on a stage movable in an XY two-dimensional plane,~~ said optical system comprises consisting of said objective lens, a plurality of reflecting mirrors, a half mirror, said a light source, and said a camera, and

said light source generates ~~generating~~ light which illuminates ~~said cells,~~ ~~moving through said flow path,~~ through said objective lens and through said window, said cells moving through said flow path, to allow said camera to image said cells illuminated by said light.

3. (Previously presented) The cell observation apparatus according to claim 1, further comprising temperature control means for controlling the temperature of the atmosphere in said casing and the main body of said casing to be a predetermined temperature.

4. (New) The cell observation apparatus according to claim 1 wherein

said X direction is perpendicular to said optical axis; and

said sliding horizontal movement of said camera is along said optical axis.

5. (New) The cell observation apparatus according to claim 2, further comprising temperature control means for controlling the temperature of the atmosphere in said casing and the main body of said casing to be a predetermined temperature.

6. (New) The cell observation apparatus according to claim 2 wherein
- said X direction is perpendicular to said optical axis; and
- said sliding horizontal movement of said camera is along said optical axis.